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INTRODUCTION

In an emergency, a person should be able to call for police, fire, and ambulance emergency aid promptly and without confusion, regardless of his or her familiarity with the various emergency services or the community itself.

Universal implementation of 911 means that regardless of location, familiarity with the area, or type of emergency, any person in North America with access to a telephone could dial 911 and obtain assistance. This is the ultimate goal of the 911 concept.

Great Britain was the first country to institute a uniform, nation-wide telephone number for emergency calling purposes with the introduction of '999' in 1937.

In the 1967 "Report by the President's Commission on Law Enforcement and Administration of Justice" it was recommended that "whenever practical, a single police telephone number should be established, at least within a metropolitan area and eventually over the entire United States, comparable to the telephone company's long distance information number". This recommendation led to the telephone companies in all of North America agreeing to set aside 911 as the 3 digit number for emergency use.

The 911 service is not yet universal, but it is spreading rapidly. For example, on the west coast of the United States, the population of California is now 100% served by 911; Oregon, 89%; and Washington, 88%. In British Columbia the City of Vancouver implemented a 911 service in 1976, the first community in BC to do so. Squamish followed in 1977; Richmond, in 1979; and Kamloops, in 1980. Kelowna, when commencing their 911 service this year, were the first in this Province to use the new technology, the enhanced 911 system.

BACKGROUND

In July of 1984 the Regional Administrative Advisory Committee (RAAC) established a subcommittee to: "investigate and report on the practicality of extending the 911 service for emergencies to all municipalities in Greater Vancouver".

In January 1985 the subcommittee reported that a single, centralized 911 system was not technically possible due to the mixture of mechanical, electronic analogue, and electronic digital switching gear in place in British Columbia Telephone Company's (BC Tel) system in the GVRD area. BC Tel could only offer the Basic 911 service (B911).

Such a system would have meant the setting up of central answering points for the region, with a hand-off procedure to the agency that would be responsible for dispatching the appropriate emergency unit(s).

At the RAAC meeting of June 6, 1985, it was agreed that the costs for this option were too high and the organizational arrangements were not acceptable.

In early 1986 BC Tel announced that it had scheduled a major upgrading of their switching systems and they would now be able to offer the Enhanced 911 service to the GVRD.

On April 21, 1986 the Regional Manager recommended to the Regional Board that a Task Force be established to oversee a feasibility study into an E911 emergency telephone service for the GVRD. This recommendation was approved and funds were provided in the 1987 Provisional Budget to conduct a full feasibility study in 1987.

BASIC 911 vs. ENHANCED 911

The majority of systems in North America today are Basic 911. Two such examples are Vancouver and Richmond. While this system works very well in most communities, there are some shortcomings which can render it nearly unworkable in large multi-jurisdictional areas.

For example, Basic 911 allows for only one Public Safety Answering Point (PSAP) per telephone company wire centre. Because there is a lack of conformity between political jurisdictional and wire centre boundaries, it is possible for one wire centre to cover areas in two or more political jurisdictions. In such cases, some people would always reach the wrong PSAP when they dial 911.

To compound this problem, the boundaries of political jurisdictions themselves frequently don't conform. For instance, a rural fire district and and a city fire department may each be responsible for part of an incorporated area while the city police department covers the entire area. Calls cannot be transferred from police to fire until the correct agency is identified.

Basic 911 also allows no means of determining the exact location of the emergency without questioning the caller. This can be a particular problem when the caller is incoherent, seriously injured, or otherwise incapacitated.

Enhanced 911 has been designed to reduce or eliminate most of the aforementioned jurisdictional boundary problems through the use of the following major features:

Selective Routing - Automatically routes the call to the appropriate PSAP, greatly reducing the number of out-of-jurisdiction calls.

Selective Transfer allows call receivers at a PSAP to transfer an incoming call to another agency by depressing a single button.

Automatic Number Identification (ANI) provides a visual display of the calling number at the 911 call receiver's position.

Automatic Location Identification (ALI) provides a visual display of the address associated with the calling telephone number along with the identification of the emergency police, fire and medical response agencies.

SYSTEM FEATURES (E911)

A. Selective Routing: Automatically routes the call to the appropriate Public Safety Answering Point (PSAP), greatly reducing the number of out-of-jurisdiction calls. The routing is directed by Selective Routing Tables. The key to developing the Selective Routing Tables is the Master Street Address Guide, which consists of all streets and address ranges of telephone subscribers within the boundaries of the wire centres included in the system.

B. ANI (AUTOMATIC NUMBER IDENTIFICATION): When a 911 call is answered, Automatic Number Identification immediately causes the telephone number of the calling party to appear on a display console. This generally eliminates the need for the caller to give his telephone number to the call receiver.

C. ALI (AUTOMATIC LOCATION IDENTIFICATION): Displays the name (if assigned to a company) and address associated with the calling telephone on the ALI display console. Other information on the ALI screen includes a repeat of the calling telephone number, the date the call was received, and the names of the three emergency agencies (police, fire and ambulance), that respond to calls for aid at the address identified on the console.

D. CENTRAL OFFICE TRANSFER: E911 allows a PSAP to conference or transfer a 911 call to another PSAP or to any dialable seven or ten-digit number. During the transfer, and until the PSAP disconnects, all ANI/ALI data related to the call will continue to be displayed.

E. CALL DETAIL RECORDING: When a call is routed to a primary or secondary PSAP, a teleprinter may be located to provide the pertinent details of the call. This can include the telephone number of the caller, the position number of the call receiver in the PSAP, the time the call began to ring at the PSAP, the time it was answered, the time of transfer, the time of disconnect, and the trunk the call utilized.

F. DEFAULT ROUTING: will provide for the pre-selecting of default PSAP's so that if an incoming 911 call cannot be selectively routed due to ANI failure, garbled digits, or party line calls, it will be routed to the default PSAP.

G. ALTERNATE ROUTING: This feature can be provided to automatically re-route 911 calls to a designated alternate PSAP if all incoming 911 lines to a selectively routed PSAP are busy.
NIGHT SERVICE is another form of alternate routing. In this case calls are re-routed to another PSAP when the original PSAP chooses to close.

H. FORCED DISCONNECT: allows the PSAP to disconnect from the call if the caller refuses to hang up. It prevents a caller from holding emergency trunks out of service.

TERMS OF REFERENCE FOR THE STUDY

The terms of reference for the study can be summarized as follows:

1. Identify several operating arrangements which are feasible.

2. Describe the operating standards that are critical to the design of the system.

3. Estimate the capital and operating cost of the system options. Compare those costs with the current costs of responding to emergency calls and describe the qualitative differences between the options and the current arrangements.

4. Describe the administrative options available to local governments to finance and to manage the system options.

5. Prepare interim and final reports.

APPROACH

In the initial phase of the study technical reports on 911 systems were gathered and reviewed. Trends were looked for to determine the types of enhanced systems that were being implemented in similar environments to the Greater Vancouver Regional District.

The next step was to pay on-site visits to all of the emergency agencies in the GVRD to acquire a working knowledge and understanding of their communications operations. Careful attention was paid to call volumes and the level of staffing and service that was being provided.

During the site visits senior staff were interviewed in order to learn what performance standards each would expect of a 911 service and where they would expect to encounter operational difficulties. These sessions provided to be honest, open and extremely useful. (SITE VISIT SUMMARIES ARE CONTAINED IN APPENDIX A.)

Lines of communication were established with BC Tel personnel very early in the study because of the need to have a close working relationship with them. They have been very quick to offer solutions to problems as they surfaced and to suggest various ways of improving the design of the system.

A visit to two on-line Enhanced 911 systems was arranged and proved to be of great benefit. Not only did it provide an opportunity to inspect modern systems close up, but it also afforded an opportunity to meet with the technical people who had a wealth of information to share on the subjects of design, implementation and operation of E911 systems.

It is worth noting here that throughout the study there was a very strong opinion expressed from all quarters favouring a regional 911 service.

SYSTEM OPTIONS

The terms of reference call for the identification of several operating systems that would be feasible. There are only two basic systems that are worthy of consideration, but they can be arranged in several ways, as will be shown in this section of the report.

Option 1: Selective Routing to a Public Safety Answering Point

Using the enchanced 911 technology, a call for emergency aid originating in a municipality will be automatically routed to the police communication centre in that municipality. The complaint-taker's position will be equipped with a telephone instrument and display terminal. When the 911 call is answered the operator will receive not only the voice communication, but a visual display of the caller's telephone number, name of the company (business premises only) and the address, i.e., location of the telephone. The police operator will then ask the caller for the nature of his/her emergency, Police, Fire or Ambulance. A need for police assistance, and this occurs in 85% of the calls, can be acted upon immediately. When the caller requests either fire or ambulance, the call will be transferred to the appropriate agency without delay.

The call load at each of the police communication centres will increase when it becomes the primary answering point for fire and ambulance calls. But this increase should not be significant as those calls will be quickly transferred through the use of one or two functions keys on the operator's console. Under normal circumstances the caller will not be questionned until the hand-off has been completed and the responding agency is in control of the call.

When a call is extended in this way, the ANI and ALI will be passed for the information of the Fire/Ambulance dispatcher. During the course of this study it was determined that, with perhaps only three exceptions, this option could be integrated into the existing police network without adding staff. The exceptions are Surrey, Coquitlam and Langley, where they are currently experiencing a heavy police call load. These RCM Police detachments have applied for additional staff for their communications and, provided this help is forthcoming, they should be able to take on this new function.

Two adjustments in the selective routing of calls in the 911 system will be necessary in order to include Lions Bay and Belcarra villages. Currently a Lions Bay resident, when he requires police assistance, dials by long distance (1-898-9611) to the Squamish RCM Police while, on the other hand, he must direct his fire call to the West Vancouver Fire Department. It is proposed that the 911 call from this community be selectively routed to the RCM Police Vancouver Sub-Division communication centre where an operator will extend or hand-off all calls as follows: Police assistance will be extended by voice radio to the Squamish detachment. Fire assistance will be transferred to the West Vancouver Fire Department. Ambulance assistance will be transferred to EHS.

In the case of Belcarra, a call for police assistance is currently responded to by the Coquitlam RCM Police, while fire calls go to the Port Moody police/fire communications centre, where a call-out of the Belcarra volunteer firemen is initiated.

It would lessen some degree of confusion in the community if all 911 calls were directed to the Coquitlam RCM Police and there handed off, when necessary, to the Coquitlam District Fire Department to activate the call-out and to EHS when medical aid is requested.

This style of system is the one most commonly selected for implementation in the United States, in counties where the mix of jurisdictions and emergency agencies closely resemble that of the GVRD. The nearest example of this is King County, in the state of Washington, where an Enhanced 911 system was announced in late 1985.

This system can be implemented with little disruption at the agency level. It can also be modified at a later date if such a move is desirable.

SEE OPTION 1 ILLUSTRATED IN FIGURE 1

Option 2: Selective Routing to Public Safety Answering Points with Some Consolidation of Fire Department Communications

This arrangement is identical to Option 1 in respect to the selective routing feature. It differs at the secondary answering stage, i.e., fire dispatch, by consolidating these communication operations in several areas of the GVRD.

Provided there is a willingness on the part of the departments concerned, some reduction in staff would be realized and the cost of telephone trunks would be reduced.

There are several examples of fire departments, of necessity, staffing a communications centre 24 hours a day in order to answer the emergency telephone when a fire is reported, which may only occur 5 times a day or less.

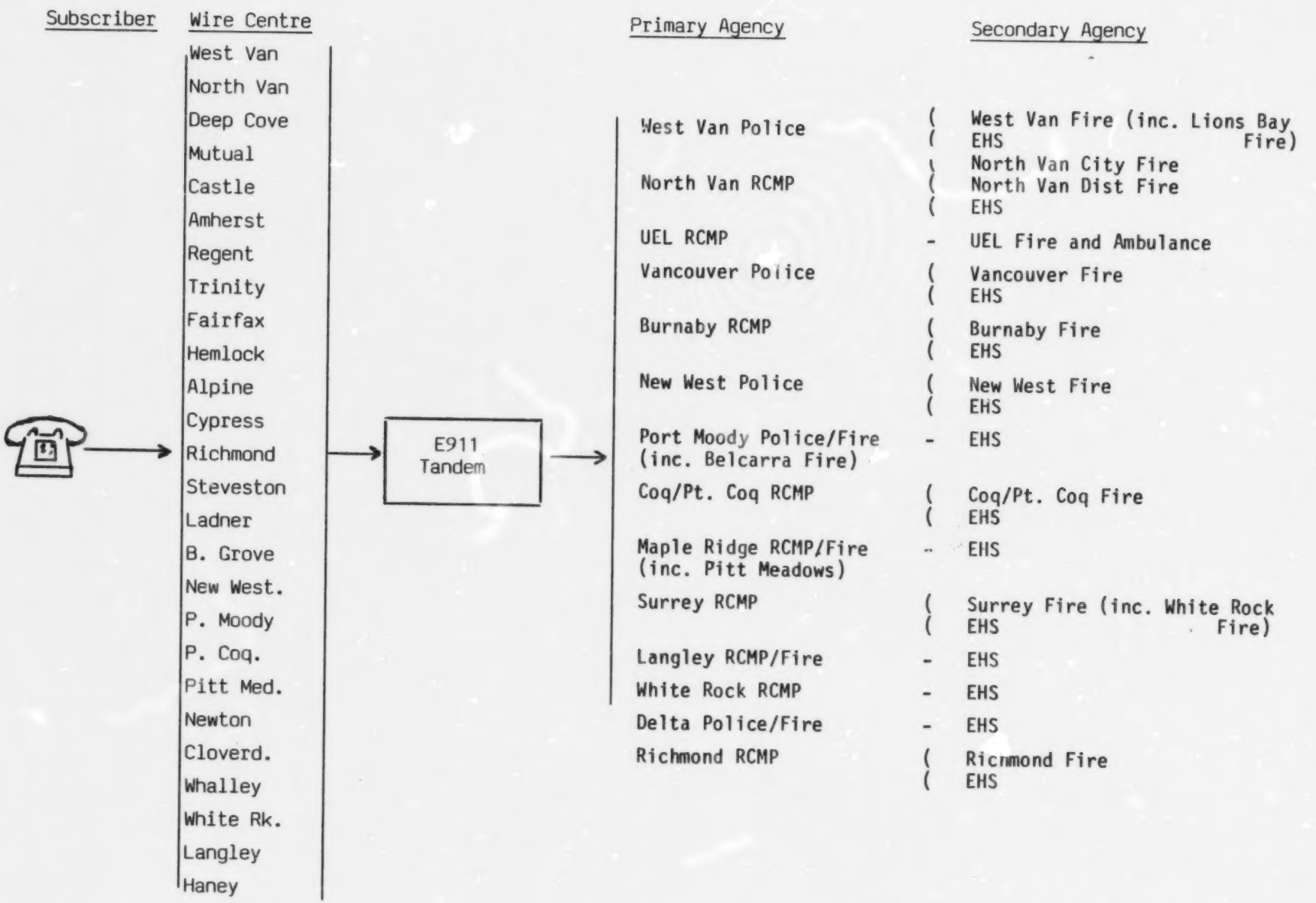
For this reason, consideration should be given to combining fire dispatching as follows:

1. Vancouver City and University Endowment Lands at Vancouver Fire Department.
   Estimated emergency calls daily - 77.

2. Coquitlam, Port Coquitlam, Belcarra, Maple Ridge and Pitt Meadows at Coquitlam District Fire Department.
   Estimated emergency calls daily - 15.

3. Burnaby, New Westminster and Port Moody at Burnaby Fire Department.
   Estimated emergency calls daily - 30.

Figure 1.


Subscriber
Wire Centre
West Van
North Van
Deep Cove
Mutual
Castle
Amherst
Regent
Trinity
Fairfax
Hemlock
Alpine
Cypress
Richmond
Steveston
Ladner
B. Grove
New West.
P. Moody
P. Coq.
Pitt Med.
Newton
Cloverd.
Whalley
White Rk.
Langley
Haney
E911 Tandem
Primary Agency
Secondary Agency
West Van Police
West Van Fire (inc. Lions Bay Fire)
EHS
North Van RCMP
North Van City Fire
North Van Dist Fire
EHS
UEL RCMP
UEL Fire and Ambulance
Vancouver Police
Vancouver Fire
EHS
Burnaby RCMP
Burnaby Fire
EHS
New West Police
New West Fire
EHS
Port Moody Police/Fire (inc. Belcarra Fire)
EHS
Coq/Pt. Coq RCMP
Coq/Pt. Coq Fire
EHS
Maple Ridge RCMP/Fire (inc. Pitt Meadows)
EHS
Surrey RCMP
Surrey Fire (inc. White Rock Fire)
EHS
Langley RCMP/Fire
EHS
White Rock RCMP
EHS
Delta Police/Fire
EHS
Richmond RCMP
Richmond Fire
EHS

4. North Vancouver District, North Vancouver City, West Vancouver and Lions Bay at North Vancouver District Fire Department.
   Estimated emergency calls daily - 16.

5. Surrey, White Rock, Langley Township and Langley City at Surrey Fire Department.
   Estimated emergency calls daily - 20.

NOTE: It should be noted that through this consolidation of centres, the RCM Police in Maple Ridge and Langley would be relieved of the responsibility for dispatching fire calls in their areas.

SEE OPTION 2 ILLUSTRATED IN FIGURE 2.

Option 3: Selective Routing/Central Answering

One central answering centre is feasible for the GVRD member municipalities, with the exception of Vancouver City and the Township of Richmond. It would be counter-productive to include these two municipalities as their 911 centres are operating efficiently. In addition, through the selective routing process, they would be included in the total system with its enhanced features.

The Central Answering arrangement would be patterned after the Edmonton and Calgary systems. The 911 call would be routed to the central answering office that would be independent of police, fire and ambulance. The operator receiving the call would determine from the caller the type of assistance that is required and direct the call to the appropriate agency. Once again, as in the previous options, the ANI and ALI would accompany the call to the central answering point and thence during the hand-off to the responding agency.

With this arrangement there can be no suggestion that one agency is receiving a higher priority than another at the primary answering point. Call volumes for the three responding agencies would be unchanged.

The operating cost for this system is high as it requires an entirely new body of people to staff the central answering office and the facility itself. These costs are detailed later in the report.

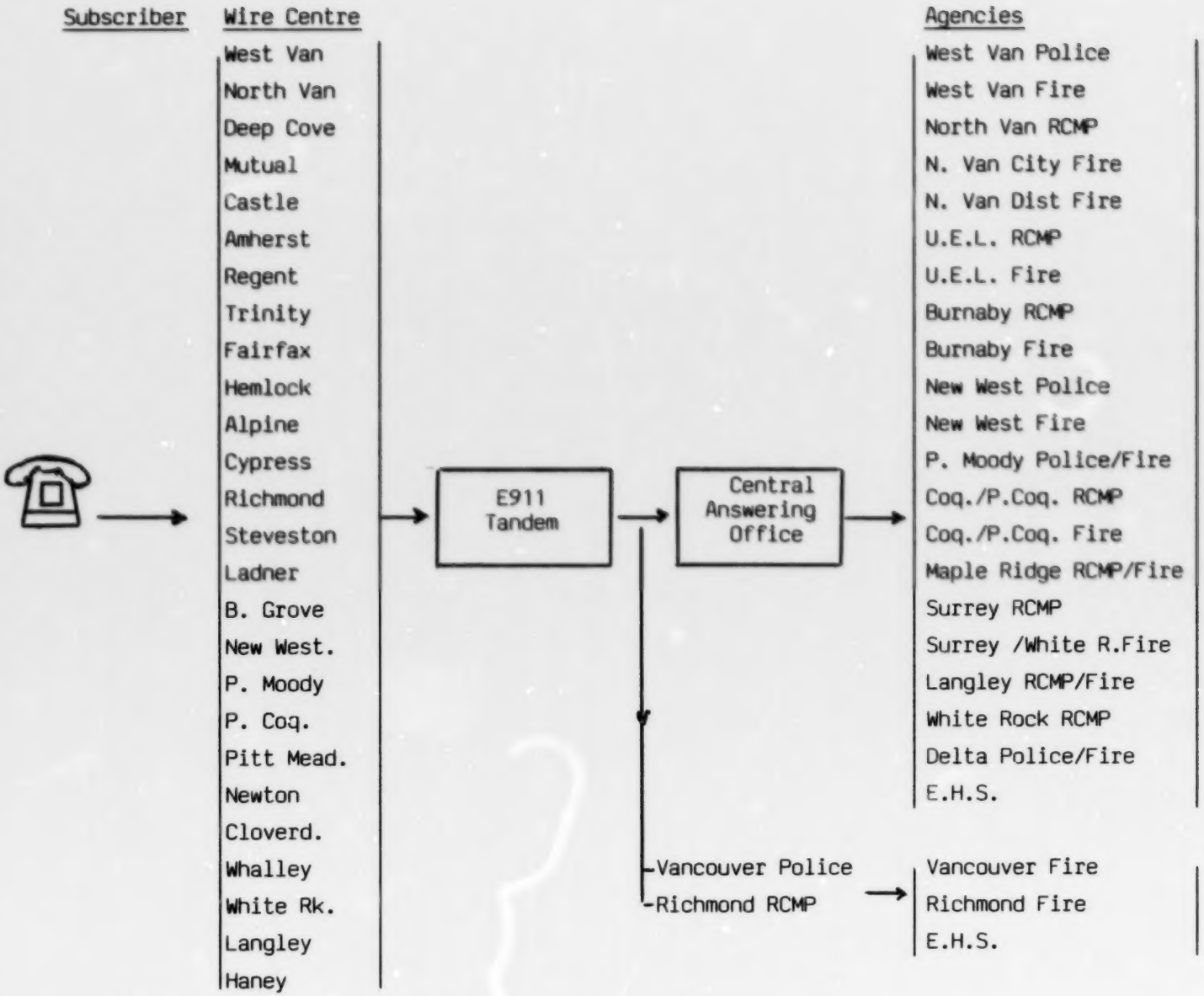
SEE OPTION 3 ILLUSTRATED IN FIGURE 3.

Figure 2.

Subscriber	Wire Centre		Primary Agency	Secondary Agency
	West Van		West Van Police	(North Van Dist Fire (EHS
	North Van		North Van RCMP	(North Van Dist Fire (EHS
	Deep Cove		UEL RCMP	(Vancouver Fire (EHS
	Mutual		Vancouver Police	(Vancouver Fire (EHS
	Castle		Burnaby RCMP	(Burnaby Fire (EHS
	Amherst		New West Police	(Burnaby Fire (EHS
	Regent		Pt. Moody Police	(Burnaby Fire (EHS
	Trinity		Coq/Pt. Coq RCMP	(Coquitlam Fire (EHS
	Fairfax		Maple Ridge/Pitt Meadows RCMP	(Coquitlam Fire (EHS
	Hemlock		Surrey RCMP	(Surrey Fire (EHS
	Alpine		Langley RCMP	(Surrey Fire (EHS
	Cypress		White Rock RCMP	(Surrey Fire (EHS
	Richmond		Delta Police/Fire	- EHS
	Steveston		Richmond RCMP	(Richmond Fire (EHS
	Ladner			
	B. Grove			
	New West.			
	P. Moody			
	P. Coq.			
	Pitt Med.			
	Newton			
	Cloverd.			
	Whalley			
	White Rk.			
	Langley			
	Haney			

E911 Tandem

Figure 3.


Subscriber
Wire Centre
West Van
North Van
Deep Cove
Mutual
Castle
Amherst
Regent
Trinity
Fairfax
Hemlock
Alpine
Cypress
Richmond
Steveston
Ladner
B. Grove
New West.
P. Moody
P. Coq.
Pitt Mead.
Newton
Cloverd.
Whalley
White Rk.
Langley
Haney
E911 Tandem
Central Answering Office
Agencies
West Van Police
West Van Fire
North Van RCMP
N. Van City Fire
N. Van Dist Fire
U.E.L. RCMP
U.E.L. Fire
Burnaby RCMP
Burnaby Fire
New West Police
New West Fire
P. Moody Police/Fire
Coq./P.Coq. RCMP
Coq./P.Coq. Fire
Maple Ridge RCMP/Fire
Surrey RCMP
Surrey /White R.Fire
Langley RCMP/Fire
White Rock RCMP
Delta Police/Fire
E.H.S.
-Vancouver Police
-Richmond RCMP
Vancouver Fire
Richmond Fire
E.H.S.

Option 4: Selective Routing/Central Answering With Consolidation of the Fire Department Communication Centres

In this option the selective routing and central answering features contained in Option 3 are combined with the consolidation of the fire department communication centres contained in Option 2. As a result, the central answering operators would have fewer agencies to interface to when handing off the 911 calls.

The advantage of this system over Option 3 can be found in cost savings at the participating fire departments. As in Option 2, fewer staff would be required by the fire departments for receiving and dispatching calls, and fewer telephone trunks would be required to connect these agencies.

SEE OPTION 4 ILLUSTRATED IN FIGURE 4.

Option 5: Selective Routing/Central Answering by Vancouver Police

This arrangement calls for the Vancouver Police communication centre to take on the central answering responsibility for the entire GVRD.

A dialed 911 call from anywhere in the region would be automatically routed to 312 Main Street (Vancouver Police) where the primary answering function would take place. The ANI and ALI would be displayed and verified, and the caller would be asked the nature of his/her emergency, i.e., Police, Fire or Ambulance. Calls requiring Vancouver Police attention would be acted upon forthwith, while all others would be quickly transferred to the appropriate agency.

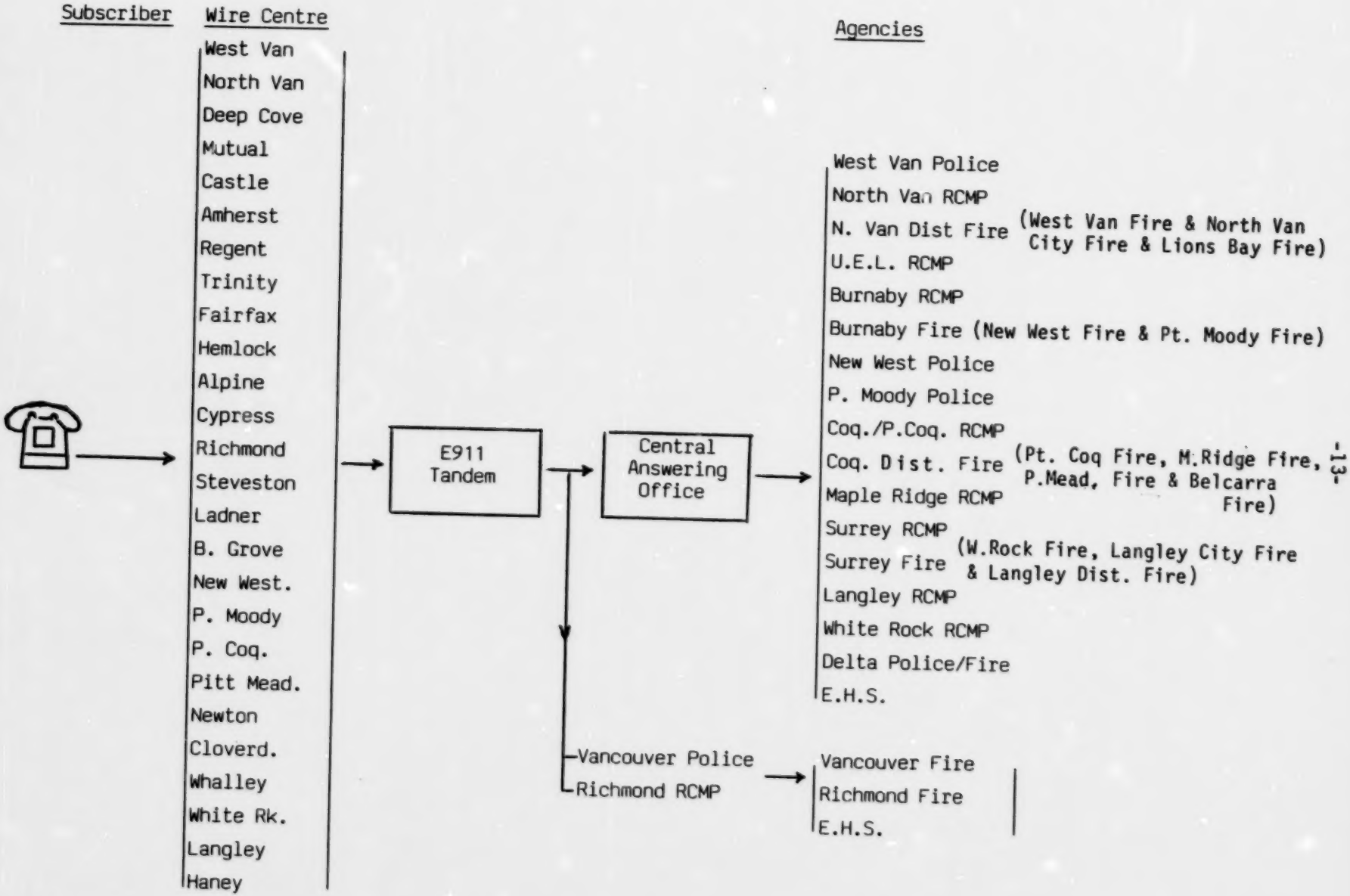
By making Vancouver the central answering point, you can eliminate some of the costs associated with Option 3. For example, there would be no requirement for the separate facility or for supervisory staff, although there would be an entitlement for Vancouver to charge for the administration of the service.

The Vancouver centre could expect an average increase of 1900 calls per day and for this volume they would require a staffing increase of 15 operators.

It should be noted that this option would remove the need for the Richmond RCM Police to intercept and extend fire and ambulance calls in that municipality. The Vancouver centre would take on that role instead.

SEE OPTION 5 ILLUSTRATED IN FIGURE 5.

Figure 4.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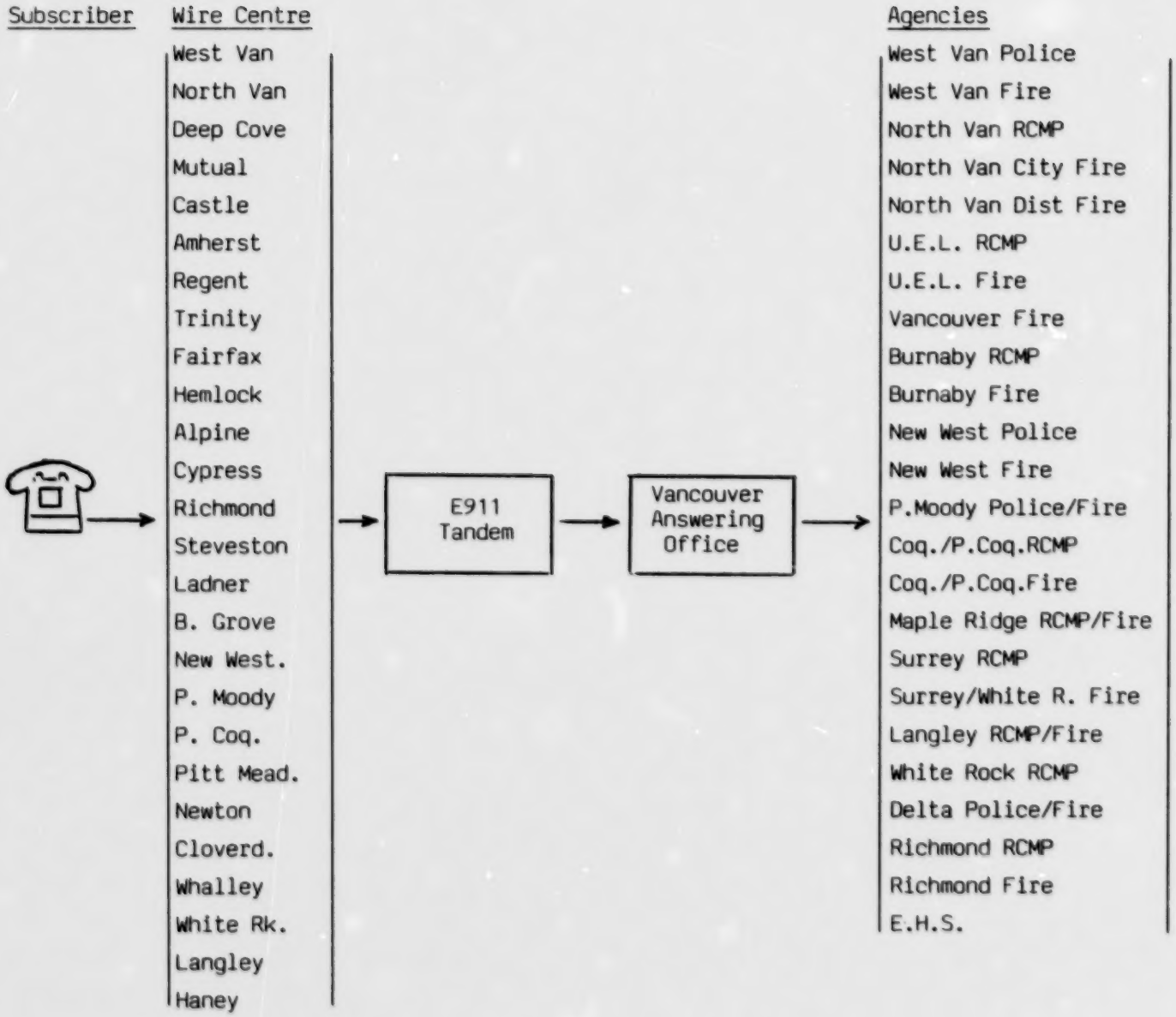
North Van RCMP
N. Van Dist Fire (West Van Fire & North Van City Fire & Lions Bay Fire)
U.E.L. RCMP
Burnaby RCMP
Burnaby Fire (New West Fire & Pt. Moody Fire)
New West Police
P. Moody Police
Coq./P.Coq. RCMP
Coq. Dist. Fire (Pt. Coq Fire, M.Ridge Fire, P.Mead, Fire & Belcarra Fire)
Maple Ridge RCMP
Surrey RCMP
Surrey Fire (W.Rock Fire, Langley City Fire & Langley Dist. Fire)
Langley RCMP
White Rock RCMP
Delta Police/Fire
E.H.S.
Vancouver Police
Richmond RCMP
Vancouver Fire
Richmond Fire
E.H.S.

Figure 5.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U.E.L. Fire
Vancouver Fire
Burnaby RCMP
Burnaby Fire
New West Police
New West Fire
P.Moody Police/Fire
Coq./P.Coq.RCMP
Coq./P.Coq.Fire
Maple Ridge RCMP/Fire
Surrey RCMP
Surrey/White R. Fire
Langley RCMP/Fire
White Rock RCMP
Delta Police/Fire
Richmond RCMP
Richmond Fire
E.H.S.

COSTS OF THE SYSTEM

The capital and annual operating costs are set out in Appendix B.

Option 1

The capital costs of Option 5 in BC Tel's proposal, plus additional 'start-up' costs, should not exceed $1,650,000 for the common system. Additionally, at least $225,000 for telephone sets and VDT terminals would be required, depending on the features that the safety services wish to acquire.

The annual operating costs are not expected to exceed $700,000 for years 1-5 following installation.

Option 2

This option could be the least costly of all because of the reduced staff required in the communications function. The savings would depend entirely upon the extent to which the municipalities were willing to go. Some minor savings for telephone trunks and agency equipment would also result.

Option 3

Option 3 is costly from the standpoint of people. The central answering centre would require the following:

1 Director @ $28,000 per year	$ 28,000
5 Supervisors @ $23,000 per year	115,000
12 Telephone Operators @ $18,000 per yr.	216,000
Plus fringe benefits @ 35%	125,000
Total	$484,650
Facility (1500 sq. ft) @ $15 sq.ft/year	22,500
GRAND TOTAL (Annually)	$507,150

By locating the answering centre in or near New Westminster there could be a saving of up to 30% in telephone trunking costs.

TABLE 1

Sample Table of Line Costs Mutual vs. New West.

Municipality	Mutual	New West.
West Vancouver	$ 51.40	$152.00
North Vancouver	43.45	115.00
Port Moody	130.90	64.65
Port Coquitlam	168.00	83.00
Newton	170.65	72.60
Cloverdale	228.95	125.60
Whalley	152.10	48.75
White Rock	247.50	151.05
Langley	260.75	154.75
Ladner	146.80	126.00
Beach Grove	197.15	163.00

Option 4

In comparison to Option 3, the cost of this option can be reduced in the same way as is suggested in Option 2, i.e., by combining fire department communication centres.

Option 5

The cost for Option 5 will be marginally less than that of Option 3. The cost for salaries in this option will be down $120,000 per year, but this saving will be off-set by an increase in the cost for telephone trunks, plus any administrative charges levied by the City of Vancouver.

NOTE: The method used in this report for calculating call volumes and answering position requirements, has been taken from a document entitled "The Design and Costing of 911 Systems" prepared by T.J. Yung and T.I. Dayharsh, for the United States Bureau of Justice Statistics.
(See Appendix E)

OPERATING STANDARDS

The prompt answering and handling of a 911 call is essential. If the public experience unexplained delays or frequent busy signals they will have no confidence in the service being offered. A call must be answered on the first ring (6-7 seconds) 95% of the time, and that is a standard that must be maintained system-wide.

Public education is seen to be one of the most important tasks necessary to achieve a successful 911 system. The public must be encouraged to use the service and therefore a thorough awareness program is recommended. Include in the program a definition of "emergency" for use with 911. One such definition that is commonly used is:

1. A situation in which Property or Human Life is in jeopardy and the prompt summoning of aid is essential.
2. A request for services which requires immediate action to Prevent Loss of Life, Reduce Bodily Injury, or Prevent or Reduce Loss of Property.
3. A call for assistance to Help Save a Life, To Report a Fire, or To Report A Crime in Progress.
4. An unforseen combination of circumstances or the resulting state that calls for Immediate Action, or an urgent need for assistance for relief, (e.g., a traffic accident involving injuries, possibility of explosion, etc.)

Training is another essential element that requires attention in order to have a reliable system. Adequate hands-on training prior to the start-up of the system is critical. An operator must not only know the correct procedures for answering the call, but he must also know the equipment he is using and its capabilities. Then, when the system is on-line, brush-up training sessions should be scheduled frequently enough to ensure that standards are being maintained.

The agencies must also be prepared to introduce procedures for handling "Silent 911" calls (no voice on the line). An upsurge in these calls can be anticipated with the ALI feature. The majority of the calls will be caused by dialing errors or the work of pranksters, but the valid incomplete call that is a true emergency cannot be overlooked. Therefore, in all cases, prompt action is necessary. The answering agency should first attempt a ring-back on the line, but if that fails to bring a response a unit must then be dispatched.

The accuracy of the data base that contains the address of the telephone subscriber (ALI) is an important ingredient of the system. The telephone company must pay particular attention to this file and its correctness at the time of start-up and in keeping it up-to-date and accurate thereafter. This ALI information is of great benefit to the emergency agencies, but it should never be taken at face value. The operator, when answering a 911 call, must always verify that the calling party's address being displayed is in fact correct.

Before any 911 service is commenced a Standards Committee should be struck. Such a committee would be responsible for setting operating standards and to seeing that those standards are maintained during the life of the system.

FINANCING AND ADMINISTRATING THE SYSTEM

The Enhanced 911 Telephone System consists of two key components as far as benefits are concerned:

1. Upgrading of the existing systems in Vancouver and Richmond through enhancement by simultaneous identification of the telephone number and the location of the telephone of each emergency call.

2. The installation of a total new E911 telephone system in all other municipalities and electoral areas in GVRD.

The list of the municipalities which would benefit from (2) above are listed in Table 2 below.

TABLE 2

Village of Belcarra	District of Surrey
District of Burnaby	District of West Vancouver
District of Coquitlam	City of White Rock
Corporation of Delta	Electoral Area "A"
Village of Lions Bay	Electoral Area "B"
City of New Westminster	City of Langley
City of North Vancouver	District of Langley
District of North Vancouver	District of Maple Ridge
City of Port Coquitlam	District of Pitt Meadows
City of Port Moody	

Benefits

The public as a whole are the principal benefactors of the E911 system. It permits the safety services to respond to emergency situations faster and with more certainty than with the present listing of emergency numbers (See Appendix D). From experience in Vancouver, and in Metropolitan Toronto and Montreal, approximately 85% of the emergency calls are for police, 10% for ambulance, and 5% for fire.

However, it has been the practice in all jurisdictions to finance the 911 emergency telephone system on the basis that it provides a service to the general public and not specifically to the safety services.

Financing Options

There are two principal means of financing an E911 Telephone System:

a) by means of user fees on telephone subscribers
b) by means of levies on the real property in the jurisdiction or on the general revenue of local governments.

The first option is common in the United States but telephone companies in Canada have been excluded from charging for these services by the Canadian Radio and Telecommunications Commission. On the basis of a formal application made by the municipal region of Peel, Ontario, which was turned down by CRTC, this option does not seem worth pursuing.

The second option, therefore, of sharing the cost on the basis of the real property tax base needs examination.

Places of work and places of residence constitute the principal locations where emergencies occur, save for those which occur on the public highways or streets. If the safety services are provided for both the protection of persons and property, it is a reasonable assumption that in any area the number of emergency calls will be related to the population of the area and the number of persons working in the area.

From other studies conducted by the GVRD, it was found that there is a very positive correlation between the sum of the population and employment in an area and the real property assessment in that area. Accordingly, this rationale can be used as the basis for allocating the cost of the E911 Emergency Telephone Services between municipalities. Tables 3 and 4 show the 1986 population, employment and assessment in each municipality and the proportion shares of each (including the sum of population and employment in each municipality).

Considering that many functions are financed in this manner which are of general benefit to the electorate of the region and that there are no other options which are compelling, it is suggested that the costs be shared on the basis of the proportion of the total real property assessment in each municipality, as used for regional hospital district financing.

TABLE 3

MUNICIPALITY/ ELECTORAL AREA	1986 POPULATION	% OF TOTAL POPULATION	1986 EMPLOYMENT	% OF TOTAL EMP	POP + EMP	POP + EMP % DISTRIBUTION
DISTRICT OF BURNABY	145,161	10.51%	68,649	10.60%	213,810	10.54%
DISTRICT OF COQUITLAM	69,291	5.02%	16,787	2.59%	86,078	4.24%
CORPORATION OF DELTA	79,783	5.78%	17,962	2.77%	97,745	4.82%
CITY OF NEW WESTMINSTER	39,972	2.89%	22,314	3.44%	62,286	3.07%
CITY OF NORTH VANCOUVER	35,959	2.60%	20,384	3.15%	56,343	2.78%
DISTRICT OF NORTH VANCOUVER	68,338	4.95%	15,241	2.35%	83,579	4.12%
CITY OF PORT COQUITLAM	29,115	2.11%	8,427	1.30%	37,542	1.85%
CITY OF PORT MOODY	15,754	1.14%	3,985	0.62%	19,739	0.97%
TOWNSHIP OF RICHMOND	108,492	7.86%	56,649	8.74%	165,141	8.14%
DISTRICT OF SURREY	181,683	13.16%	50,894	7.86%	232,577	11.46%
CITY OF VANCOUVER	435,997	31.58%	293,036	45.23%	729,033	35.94%
DISTRICT OF WEST VANCOUVER	37,997	2.75%	12,464	1.92%	50,461	2.49%
CITY OF WHITE ROCK	14,387	1.04%	3,751	0.58%	18,138	0.89%
VILLAGES & ELECTORAL AREAS	4,223	0.31%	634	0.10%	4,857	0.24%
CITY OF LANGLEY	16,557	1.20%	3,637	0.56%	20,194	1.00%
DISTRICT OF LANGLEY	53,900	3.90%	36,771	5.68%	90,671	4.47%
DISTRICT OF MAPLE RIDGE	36,035	2.61%	14,322	2.21%	50,357	2.48%
DISTRICT OF PITT MEADOWS	8,085	0.59%	1,953	0.30%	10,038	0.49%
TOTAL	1,380,729	100.00%	647,860	100.00%	2,028,589	100.00%

TABLE 4

	POP + EMP % DISTRIBUTION	1987 ASSESSMENT	% OF TOTAL ASSESSMENT
NEW WESTMINSTER	3.07%	$205,844,920	2.42%
NORTH VANCOUVER CITY	2.78%	$256,249,879	3.01%
PORT COQUITLAM	1.85%	$121,046,307	1.42%
PORT MOODY	0.97%	$77,972,565	0.92%
WHITE ROCK	0.89%	$63,020,913	0.74%
BURNABY	10.54%	$944,107,555	11.10%
COQUITLAM	4.24%	$329,265,846	3.87%
DELTA	4.82%	$402,038,257	4.72%
NORTH VANCOUVER DISTRICT	4.12%	$396,892,453	4.66%
RICHMOND	8.14%	$766,739,766	9.01%
SURREY	11.46%	$765,557,004	9.00%
VANCOUVER	35.94%	$3,362,313,720	39.51%
WEST VANCOUVER	2.49%	$312,405,991	3.67%
LANGLEY CITY	1.00%	$82,674,204	0.97%
LANGLEY DISTRICT	4.47%	$198,107,860	2.33%
MAPLE RIDGE	2.48%	$138,072,881	1.62%
PITT MEADOWS	0.49%	$28,861,252	0.34%
VILLAGES & ELECT AREAS	0.24%	$58,047,926	0.68%
TOTAL	100.00%	$8,509,219,299	100.00%

APPENDIX A

AGENCY VISIT SUMMARIES

DISTRICT OF NORTH VANCOUVER	CITY OF NORTH VANCOUVER
Area: 17,819.3 hectares	Area: 1,267.3 hectares
Population: 68,338	Population: 35,959
Households: 23,511	Households: 17,278

Police (District & City of North Vancouver)

Royal Canadian Mounted Police
Officer in Charge: Superintendent S. Thompson

Communications:
- Emergency telephone number: 988-4111
- Non-emergency telephone number: 985-1311
- Staffing/Shift: 4
- Shifts/Day: 2 (12 hour)
- Total personnel: 17 (1 Constable and 16 Telecom/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load (1986): 40,600 case files were opened.

Fire (District of North Vancouver)

District of North Vancouver Fire Department
Officer in Charge: Fire Chief Archie M. Steacy

Communications:
- Emergency telephone number: 985-2525
- Non-emergency telephone number: 980-7575
- Staffing/Shift: 1
- Shifts/Day: 3
- Total personnel: 5 (Alarm Operators)
- Responsibility: Answer all emergency and non-emergency fire calls and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 5 emergency calls per day.

Fire (City of North Vancouver)

North Vancouver City Fire Department
Officer in Charge: Fire Chief Douglas G. Cairns

Communications:
- Emergency telephone number: 985-5323
- Non-emergency telephone number: 980-5021
- Staffing/Shift: 1
- Shifts/Day: 2 (10 & 14 hour)
- Total personnel: 5 (1 on-duty fireman from each platoon)

(Cont.)

CITY OF NORTH VANCOUVER (Continued)

Fire

Responsibility: Answer all emergency and non-emergency fire calls and dispatch.
Level of service: 99% of the emergency calls are answered on the first ring.
Call load (1986): 5 emergency calls per day.

DISTRICT OF COQUITLAM	CITY OF PORT COQUITLAM
Area: 15,274.6 hectares	Area: 2,509.1 hectares
Population: 69,291	Population: 29,115
Households: 24,288	Households: 9,358

Police (District of Coquitlam & City of Port Coquitlam)

Royal Canadian Mounted Police
Officer in Charge: Superintendent E. Naaykens

Communications:
- Emergency telephone number: 464-6211
- Non-emergency telephone number: 464-3461
- Staffing/Shift: 2 (3rd position Thur., Fri., & Sat.)
- Shifts/Day: 3
- Total personnel: 12 (Telecom/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring. Additional staff have been applied for to cope with the call volume.
- Call load: Unavailable.

NOTE: Policing of The Village of Belcarra is the responsibility of this Detachment.

Fire (District of Coquitlam & City of Port Coquitlam)

District of Coquitlam Fire Department
Officer in Charge: Fire Chief D. Johnson

City of Port Coquitlam Fire Department
Officer in Charge: Fire Chief J. Boileau

Communications: Communications for both departments is supplied by the District of Coquitlam.
- Emergency telephone number: 939-1122 (District)
  941-8611 (City)
- Non-emergency telephone number: 942-4404 (District)
  942-9828 (City)
- Staffing/Shift: 1
- Shifts/Day: 2 (10 hour & 14 hour)
- Total personnel: 4 (Dispatchers)
- Responsibility: Answer all emergency and non-emergency fire calls and dispatch for both departments.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 10 emergency calls per day.
  (7 for District - 3 for City)

NOTE: See also The Village of Belcarra.

THE VILLAGE OF BELCARRA

Area: 561.1 hectares

Population: 549

Households: 194

Police

This community is policed by the Coquitlam Detachment of the Royal Canadian Mounted Police.

Communications:
Emergency telephone number: 464-6211
Non-emergency telephone number: 464-3461

Fire

This community receives its fire protection from a volunteer fire department. The receipt of a fire call, the call-out and dispatch of the volunteers is all handled through the Port Moody Police/Fire communications centre.

Communications:
Emergency telephone number: 461-1230
Non-emergency telephone number: 939-4411

DISTRICT OF MAPLE RIDGE	DISTRICT OF PITT MEADOWS
Area: 26,710.2 hectares	Area: 5,004.5 hectares
Population: 36,035	Population: 8,085
Households: 12,479	Households: 2,684

Police

Royal Canadian Mounted Police
Officer in Charge: Inspector J. Mattewson

Communications:

- Emergency telephone number: 467-3411
- Non-emergency telephone number: 463-6251
- Staffing/Shifts: 2 from 08:00 to 24:00 hours
  1 from 24:00 to 08:00 hours
- Shifts/Day: 3
- Total personnel: 7 (Telecom/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and fire for both districts and dispatch all agencies.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load: Police statistics are unavailable. Maple Ridge Fire responded to an estimated 300 calls and Pitt Meadows Fire responded to an estimated 90 calls in 1986.

Fire (District of Maple Ridge)

District of Maple Ridge Fire Department
Officer in Charge: Fire Chief Paul Steen
Emergency telephone: 463-6234

Fire (District of Pitt Meadows)

District of Pitt Meadows Fire Department
Officer in Charge: Fire Chief Len Garis
Emergency telephone number: 465-4141

NOTE: The dispatch of fire calls runs contrary to the policy of the Royal Canadian Mounted Police.

TOWNSHIP OF LANGLEY	CITY OF LANGLEY
Area: 31,765.3 hectares	Area: 1,018.2 hectares
Population: 53,900	Population: 16,557
Households: 17,408	Households: 6,311

Police (Township & City of Langley)

Royal Canadian Mounted Police
Officer in Charge: Inspector D. S. Mortimer

Communications:
- Emergency telephone number: 530-8822
- Non-emergency telephone number: 534-4184
- Staffing/Shifts: 2
- Shifts/Day: 2 (12 hour)
- Total personnel: 8 (Telecom/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and fire for the Township and City of Langley and dispatch all agencies.
- Level of service: The staff are having difficulty coping with the call volume. A third position for 16 hours a day has been applied for.
- Call load (1986): Police opened 32,400 case files.
  Township Fire responded to 806 emergency calls.
  City Fire responded to 299 emergency calls.
  There was an additional 3600 non-emergency fire calls.

Fire (Township of Langley)

The Township of Langley Fire Department
Officer in Charge: Fire Chief G. Yerkie
Emergency telephone number: 534-4141

Fire (City of Langley)

The City of Langley Fire Department
Officer in Charge: Fire Chief J. S. McGregor
Emergency telephone number: 534-4141

NOTE: The dispatch of fire calls runs contrary to the policy of the Royal Canadian Mounted Police.

CITY OF WHITE ROCK

Area: 1,401.5

Population: 14,387

Households: 7,042

Police

Royal Canadian Mounted Police
Officer in Charge: Staff Sergeant S. M. Nowicki

Communications:
- Emergency telephone number: 531-1146
- Non-emergency telephone number: 531-5527
- Staffing/Shift: 1
- Shifts/Day: 2 (12 hour)
- Total personnel: 4 (Telecom/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load (1986): 10,500 files were opened.

Fire

City of White Rock Fire Department
Officer in Charge: Fire Chief P. Duke

Communications: (By Surrey Fire Department)
- Emergency telephone number: 531-1414

NOTE: See also Surrey Fire Department.

DISTRICT OF SURREY

Area: 36,336 hectares

Population: 181,683

Households: 62,162

Police

Royal Canadian Mounted Police
Officer in Charge: Superintendent G. U. Strathdee

Communications:

- Emergency telephone number: 574-4131
- Non-emergency telephone number: 574-4122
- Staffing/Shift: 7
- Shifts/Day: 3 (8 hour)
- Total personnel: 32 (4 Constables & 28 Telecom/Ops.)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring. This centre is handling a heavy call volume and will require more staff if the load were to increase.
- Call load: 150 emergency calls per day (estimate).

Fire

District of Surrey Fire Department
Officer in Charge: Fire Chief H. G. Seter

Communications:

- Emergency telephone number: 596-3344
- Non-emergency telephone number: 591-4471
- Staffing/Shift: 1
- Shifts/Day: 2 (12 hour)
- Total personnel: 6 (Dispatchers)
- Responsibility: Answer all emergency and non-emergency fire calls for Surrey and White Rock and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 19 emergency calls per day (17 for Surrey and 2 for White Rock).

NOTE: See also White Rock.

DISTRICT OF WEST VANCOUVER

Area: 9,893.7 hectares

Population: 37,997

Households: 15,177

Police

West Vancouver Police Department
Officer in Charge: Chief Constable R. Brolly

Communications:

- Emergency telephone number: 922-9111
- Non-emergency telephone number: 922-4141
- Staffing/Shift: 1
- Shifts/Day: 2 (12 hour)
- Total personnel: 4 (Com/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load: 10 to 15 emergency calls per day (estimate).

Fire

West Vancouver Fire Department
Officer in Charge: Fire Chief Colin Evans

Communications:

- Emergency telephone number: 922-2345
- Non-emergency telephone number: 922-9311
- Staffing/Shifts: 1
- Shifts/Day: 2
- Total personnel: 1 on-duty fireman from each platoon.
- Responsibility: Answer all emergency and non-emergency fire calls for West Vancouver and Lions Bay and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 5.3 emergency calls per day.

NOTE: See also The Village of Lions Bay.

THE VILLAGE OF LIONS BAY

Area: 286.7 hectares

Population: 1,152

Households: 381

Police

This community is policed by the Squamish Detachment of the Royal Canadian Mounted Police.

Communications:
Emergency telephone number: 1-898-9611

Fire

This community receives its fire protection from a volunteer fire department comprised of; 20 volunteer firemen and 1 fire-hall. The hall is equipped with 1 pumper truck and 1 rescue unit.
Officer in Charge: Fire Chief Dave Pullen

Communications:
Emergency telephone number: 922-2345

NOTE: The receipt of a fire call, the call-out and dispatch of the volunteers is handled by the West Vancouver Fire Department.

CITY OF NEW WESTMINSTER

Area: 2,200.2 hectares

Population: 39,972

Households: 19,552

Police

New Westminster Police Department
Officer in Charge: Chief Constable K. Brown

Communications:

- Emergency telephone number: 521-7711
- Non-emergency telephone number: 525-5411
- Staffing/Shift: 3
- Shifts/Day: 2 (12 hour)
- Total personnel: 12 (4 Corporals & 8 Com/Ops)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load (1986): 25,500 case files were opened.

Fire

New Westminster Fire Department
Officer in Charge: Fire Chief Paul Parnell

Communications:

- Emergency telephone number: 526-4411
- Non-emergency telephone number: 524-3871
- Staffing/Shift: 1
- Shifts/Day: 3
- Total personnel: 1 full time dispatcher is assigned to day shift, Monday to Friday. The remaining hours are covered by on-duty firemen.
- Responsibility: Answer all emergency and non-emergency calls for fire and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 8 emergency calls per day.

THE CORPORATION OF THE DISTRICT OF BURNABY

Area: 10,674 hectares

Population: 145,161

Households: 58,827

Police

Royal Canadian Mounted Police
Officer in Charge: Superintendent N. Fuchs

Communications:

- Emergency telephone number: 299-8822
- Non-emergency telephone number: 294-7922
- Staffing/Shift: 5
- Shifts/Day: 2 (12 hour)
- Total personnel: 22 (Telecommunications Operators)
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load: 100 to 120 emergency calls per day (estimate).

Fire

Burnaby Fire Department
Officer in Charge: Fire Chief H. Brown

Communications:

- Emergency telephone number: 291-1234
- Non-emergency telephone number: 294-7190
- Staffing/Shift: 1
- Shifts/Day: 2 (10 hour and 14 hour)
- Total personnel: 1 fireman is assigned from on-duty shift.
- Responsibility: Answer all emergency and non-emergency calls and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 20 emergency calls per day.

DISTRICT OF DELTA

Area: 36,432.7 hectares

Population: 79,783

Households: 25,091

Police

Delta Police Department
Officer in Charge: Chief Constable P. D. Wilson

Communications: (Police and Fire combined)
- Emergency telephone number: 946-4444
- Non-emergency telephone number: 946-4411
- Staffing/Shift: 2
- Shifts/Day: 2 (12 hour)
- Total personnel: 8 (Communications Operators)
- Responsibility: Answer all emergency and non-emergency calls for police and fire and dispatch both agencies.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load: 80 emergency calls per day (estimate), 5 of which are fire related.

Fire

Delta Fire Department
Officer in Charge: Fire Chief J. Tapio

Communications: (Combined Police/Fire)
- Emergency telephone number: 946-4155

THE CITY OF PORT MOODY

Area: 1,877.5 hectares

Population: 15,754

Households: 5,426

Police

Port Moody Police Department
Officer in Charge: Chief Constable G. Laughy

Communications:

- Emergency telephone number: 461-1230
- Non-emergency telephone number: 461-3456
- Staffing/Shift: 1
- Shifts/Day: 3 (8 hour but soon will go to 2 x 12 hours)
- Total personnel: 5 (Communications Operators)
- Responsibility: Answer all emergency and non-emergency calls for police and fire and dispatch both agencies.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load (1986): Police opened 8,750 files. Fire responded to 600 emergency calls.

Fire

City of Port Moody Fire Department
Officer in Charge: Fire Chief D. C. Shefley

Communications: (Combined Police/Fire)

- Emergency telephone number: 461-1230

NOTE: Fire calls from the village of Belcarra are received and dispatched by the Police/Fire communications centre in Port Moody.

CITY OF VANCOUVER

Area: 11,614.9 hectares

Population: 432,391

Households: 188,635

Police

Vancouver Police Department
Officer in Charge: Chief Constable R. J. Stewart

Communications:

- Emergency telephone number: 9-1-1
- Non-emergency telephone number: 665-3321
- Staffing/Shift: 15
- Shifts/Day: 3 (nine day fortnight)
- Total personnel: 70 (48 Communications Operators)
  (22 Sworn members)
- Responsibility: Answer all 9-1-1 calls and transfer to fire and ambulance when those services are requested. Take complaints/reports requiring police attention and dispatch units.
- Level of service: 97% of the 9-1-1 calls are answered on the first ring.
- Call load (1986): 370,055 - 9-1-1 calls
  11,139 calls were transferred to Fire (3%)
  42,570 calls were transferred to Ambulance (11.5%)

Fire

Vancouver Fire Department
Officer in Charge: Fire Chief D. Pamplin

Communications:

- Emergency telephone number: 9-1-1
- Non-emergency telephone number: 665-6000
- Staffing/Shift: 2
- Shifts/Day: 2 (12 hour)
- Total personnel: 10 (Fire Operators)
- Responsibility: Answer all emergency calls and enquiries and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 74 per day (30 received by way of 911)

CORPORATION OF THE DISTRICT OF RICHMOND

Area: 16,806.8 hectares

Population: 108,492

Households: 38,327

Police

Royal Canadian Mounted Police
Officer in Charge: Superintendent W. Dellevuur

Communications:

- Emergency telephone number: 9-1-1
- Non-emergency telephone number: 278-1212
- Staffing/Shift: 3
- Shifts/Day: 2 (12 hour)
- Total personnel: 12 (Communications Operators)
- Responsibility: Answer all 9-1-1 calls and transfer to to fire and ambulance when those services are requested. Take complaints/reports requiring police attention and dispatch units.
- Level of service: 98% of the emergency calls are answered on the first ring.
- Call load: 100 - 9-1-1 calls daily (estimate).

Fire

Richmond Fire Department
Officer in Charge: Fire Chief Ted Lorenz

Communications:

- Emergency telephone number: 9-1-1 (except for the 52 exchang
- Non-emergency telephone number: 278-5131
- Staffing/Shift: 1
- Shifts/Day: 2 (10 hour & 14 hour)
- Total personnel: Staff are assigned from the on-duty platoon.
- Responsibility: Answer all emergency and non-emergency fire calls and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 10 emergency calls per day.

UNIVERSITY ENDOWMENT LANDS

Area: 1,410.6 hectares

Population: 3,606 permanent residents
40,000 student and faculty (estimate).

Households: 1,244

Police

Royal Canadian Mounted Police
Officer in Charge: Sergeant D. B. Schlecker

Communications:

- Emergency telephone number: 224-1322
- Non-emergency telephone number: 224-1322
- Staffing/Shift: 1
- Shifts/Day: 3
- Total personnel: 1 Telecommunications Operator at the University Detachment. After hours coverage is provided by Vancouver Sub-Division centre.
- Responsibility: Answer all emergency and non-emergency calls for police and dispatch.
- Level of service: 95% of the emergency calls are answered on the first ring.
- Call load: Unavailable.

Fire & Ambulance

University Endowment Lands Fire Department
Officer in Charge: Fire Chief W. J. Ferguson

Communications:

- Emergency telephone number: 228-4567
- Non-emergency telephone number: 224-5415
- Staffing/Shift: 1
- Shifts/Day: 2 (10 hour and 14 hour)
- Total personnel: 1 fireman is assigned from the on-duty platoon.
- Responsibility: Answer all emergency and non-emergency fire and ambulance calls and dispatch.
- Level of service: 99% of the emergency calls are answered on the first ring.
- Call load (1986): 3 emergency calls daily.

MINISTRY OF HEALTH

EMERGENCY HEALTH SERVICES COMMISSION

PROVINCIAL AMBULANCE SERVICE

Mr. Terry Reid, Regional Manager

601 West Broadway, Vancouver, B. C. V5Z 4C2.

Communications:

Supervisor of Communications: Mr. Carl Baillie
Emergency telephone number: 9-1-1 for Vancouver & Richmond, 228-4567 for University Endowment Lands, and 872-5151 for the remainder of the Greater Vancouver Regional District.
Staffing/Shift: 3 from 18:00 to 08:00 hours
4 from 08:00 to 18:00 hours
5 from 09:30 to 16:30 hours Mon. to Fri.
Total personnel: 23 (Emergency Medical Assistants)
Responsibility: Receive, prioritize and dispatch all medical assistance calls. Determine level of training required for each call. Co-ordinate hospital diversion and bed availability.
Level of service: 95% of the emergency calls are answered on the first ring.

Statistics for 1986

Area	Emergency	Routine	Transfer	Total
Vancouver	19,800	26,552	11,020	57,372
Burnaby	8,755	7,445	2,099	18,299
New Westminster	3,550	3,608	4,904	12,062
Surrey) White Rock) Delta)	6,093	5,535	2,892	14,520
Richmond) Ladner)	3,775	4,813	3,554	12,142
Coquitlam) Port Coquitlam) Port Moody) Belcarra)	3,547	3,327	4,625	11,499
North Shore	2,925	3,844	1,370	8,139
Maple Ridge) Pitt Meadows)	774	880	662	2,316
TOTAL	49,219	56,004	31,126	136,349

APPENDIX B
EQUIPMENT AND COSTS

APPENDIX B

EQUIPMENT AND COSTS

BC Telephone Co. has prepared a preliminary proposal for an enhanced 911 Emergency Telephone System for the GVRD dated September 1, 1987. This proposal sets out a number of options for equipment principally in terms of telephone sets and video display terminals located at the PSAP's. It is recommended, as a result of a review of that material, that the cost of the equipment be divided into two parts; i.e., that which is common and that which is related to the operations of the particular agencies - police, fire and ambulance. The telephone sets and the visual display terminals fall into the latter category. All other equipment is essentially common to the system as a whole and not amenable to options. Accordingly, a baseline cost for the equipment has been established based on BC Tel's figures as follows:

ITEM	PURCHASE AND INSTALLATION COST	MONTHLY CHARGES
SL-INT PABX	$ 225,000	$ 1,000
Positron Switch	444,000	2,500
ALI Computer:		
Hardware	320,000	4,500
Software	90,000	-
ALI Data Base Updates	-	12,000
Statistical MUX and Modems	157,000	1,500
Telephone Network	-	25,000
Installation Costs	21,000	-
Total Common Equipment and Services	$1,257,000	$46,500

The following assumptions have been made for the PSAP Telephone Sets and Visual Display Terminals:

i) All primary PSAP's will be equipped with SL 1 telephone sets.

ii) All other PSAP's will be equipped with Key type telephone sets (Logic 10 or equivalent).

iii) All PSAP's which are Computer Aided Dispatch (CAD) equipped will use their existing CAD monitor as a E911 Visual Display terminal.

iv) All other PSAP's will use a compatible basic ASCII monitor for a Visual Display Terminal.

The estimated costs for the telephone and monitoring equipment is as follows:

	Unit Pricing
SL 1 Telephone (Vancouver Police only)	$ 930
SL 1 Telephone (all other PSAP's)	3,860
Key set telephone (Logic 10 or equivalent)	400
ASCII Visual Display Monitor	1,000
Positron Intelligent Display Monitor (optional type of Visual Display Monitor)	3,360

In addition to the equipment costs and monthly operating charges identified by BC Tel, there are additional start-up costs including:

Feasibility Study, including contract preparations	$150,000
Publicity and Public Awareness	100,000
Establishing Management Information System and Monitoring Reports and Devices	20,000
Contingency	50,000

The additional monthly charges, in addition to BC Tel's charges, would include:

- on-going costs of monitoring and management
- continuing public awareness and education
- contingencies.

No estimates can be made at this time of these elements but they are likely to be in the order of $5,000-10,000 per month.

The capital costs of the system are not likely to exceed $1,650,000 plus a minimum of $225,000 for telephone sets and VDT terminals depending on the features that the safety services wish to acquire.

The annual operating costs are not expected to exceed $700,000 for years 1-5 after installation.

In the next stage of the feasibility work all of these costs will be further refined as the specifications for the system are determined. The above figures are appropriate for planning purposes at this stage of the feasibility study.

APPENDIX C

GLOSSARY OF TERMS

GLOSSARY

ALTERNATE ROUTING - A selective routing feature which allows 9-1-1 calls to be routed to a designated alternative location if all incoming 9-1-1 lines to the primary PSAP are busy or if the primary PSAP closes down for a period.

AUTOMATIC CALL DISTRIBUTOR (ACD) - Equipment used to distribute large volumes of incoming calls in approximate order of arrival to call answerers not already working on calls, or to "store" calls until call answerers become available.

AUTOMATIC LOCATION IDENTIFICATION (ALI) - A system capability that enables the automatic display of information defining the geographical location of the telephone used to place a 9-1-1 call.

AUTOMATIC NUMBER IDENTIFICATION (ANI) - A system capability that enables the automatic display of the seven-digit number of the telephone used to place the 9-1-1 call.

BASIC 911 SYSTEM - A telephone system which automatically connects a person dialing the digits "9-1-1" to an established PSAP through normal telephone service facilities.

CALLED PARTY HOLD - A telephone system feature that enables the 9-1-1 call answerer to maintain a connection through the telephone system's switching facilities, even if the 9-1-1 caller has hung up their telephone.

CENTRAL OFFICE (CO) - Sometimes called a wire centre (a switching unit in a telephone system), this is the smallest subdivision within the telephone system which has relatively permanent geographical service boundaries.

DEFAULT ROUTING - A selective routing feature which allows 9-1-1 calls to be routed to a designated alternate location (default PSAP) if the incoming 9-1-1 call cannot be selectively routed due to ANI failure, garbled digits, or other causes which may prevent selective routing.

DIRECT TRUNKING - A telephone system design which will assure that a telephone line connection has no intermediate switching points between the originating central office and the PSAP.

DISPATCH CENTRE - The location from which a public safety agency's mobile units are dispatched.

DISPATCHER - An idividual who uses radio or other means to dispatch a public safety agency's resources. This person also may function as a 9-1-1 call answerer.

EHS - Emergency Health Services.

E911 - (Enhanced 911) A term referring to one or a combination of selectively routed 9-1-1 service, ANI and ALI, and certain other advanced features.

FORCED DISCONNECT - A telephone system feature which allows the PSAP to break or disconnect a telephone connection and thereby avoid caller jamming of 9-1-1 lines.

GRADE OF SERVICE - The probability (usually expressed as a decimal fraction) of a telephone call being blocked by busy lines.

MANUAL TRANSFER - A selective routing feature which allows the call answerer to transfer an incoming call by pressing a single button and dialing either a telephone number or a two-digit speed calling code.

911 CALL - Any telephone call that is made by dialing the digits "9-1-1".

911 CALL ANSWERER - The initial answerer of a 9-1-1 call.

911 CENTRE - (Sometimes called a PSAP) The initial answering location for 9-1-1 calls.

911 SYSTEM - A system which automatically connects a telephone, on which the digits "9-1-1" have been dialed, to an established PSAP.

PRIMARY PSAP - The initial answering location for 9-1-1 calls in a selectively routed 911 system.

PSAP - (Public Safety Answering Point) Sometimes called a 9-1-1 centre; the PSAP is the initial answering location of a 9-1-1 call.

PUBLIC SAFETY AGENCY - A functional division of a public agency which provides police, firefighting, medical or other emergency services.

RINGBACK - A telephone system feature, usually available on circuits equipped with "Called Party Hold", which enables the 9-1-1 call answerer to ring the telephone used to place a 9-1-1 call immediately after the caller has hung up.

SECONDARY PSAP - A location to which 9-1-1 calls are transferred from a PSAP.

SELECTIVE ROUTING - A telephone system feature that enables all 9-1-1 calls originating from within a defined geographical region to be answered at a predesignated PSAP.

SELECTIVE TRANSFER - A selective routing feature which allows the call answerer to transfer an incoming call by pressing a single button.

TANDEM TRUNKING - An arrangement where a telephone line connection has one or more intermediate switching points which are required or permitted before reaching the final destination (called party).

APPENDIX D

CURRENT TELEPHONE DIRECTORY - EMERGENCY NUMBERS

EMERGENCY PAGE

	FIRE OR INHALATOR	NON-EMERGENCY CALLS	POLICE	NON-EMERGENCY CALLS	AMBULANCE
ANMORE/BELCARRA	461-1230	939-4411	464-6211	464-3461	872-5151
BURNABY	291-1234	294-7190	299-8822	294-7922	
COQUITLAM DISTRICT	939-1122	939-4422	464-6211	464-3461	
DELTA	946-4155		946-4444	946-4411	
LANGLEY CITY	534-4141 INHALATOR 872-5151	530-3131	530-8822	534-4184	
LANGLEY MUNICIPALITY	534-4141 INHALATOR 872-5151	534-3211	530-8822	534-4184	
LIONS BAY	922-2345	922-9311	1+898-9611		
MAPLE RIDGE including HANEY	463-6234	463-5221	467-3411	463-6251	
NEW WESTMINSTER	526-4411	524-3871	521-7711	525-5411	
NORTH VANCOUVER CITY	985-5323	980-5021	988-4111	985-1311	
NORTH VANCOUVER DISTRICT	985-2525	980-7575	988-4111	985-1311	
PITT MEADOWS	465-4141	465-5454	467-3411	463-6251	
POINT ROBERTS	CALL OPERATOR (No Chg) ZENITH 2550 or Dial Direct 1+206+676-6811		945-2733 or 1+206+676-6711		CALL OPERATOR (No Chg) ZENITH 2550 or Dial Direct 1+206+676-6811
PORT COQUITLAM	941-8611	942-9828	464-6211	464-3461	872-5151
PORT MOODY	461-1230	461-7795	461-1230	461-3456	872-5151
RICHMOND your telephone number starts with 52	911 278-1234	278-5131	911 278-1212	278-1212	911 872-5151
SURREY	596-3344	591-4471	574-4131	574-4122	872-5151
UNIVERSITY Endowment Lands	228-4567	224-5415	224-1322	224-1322	228-4567
VANCOUVER	911	665-6000 or 665-6032	911	Switchboard 665-3535 Crime Reports 665-3321	911
WEST VANCOUVER	922-2345	922-9311	922-9111	922-4141	872-5151
WHITE ROCK	531-1414	531-4313	531-1146	531-5527	872-5151

ctor After Hours Locating Assistance 683-2474
ison Control Centre ..... 682-5050 or 682-2344
lpline for Children Counselling for Child Abuse & Neglect ..... Dial '0' ask for Zenith 1234
xual Assault Centre For Victims of Sexual Assault
Rape Relief 872-8212
Women Against Violence Against Women 875-6011

Freeway Patrol 666-5343
Marine & Aircraft Distress 666-7888
Spills — Dangerous Goods Call Operator (no charge) ..... Zenith 2667
Trouble — Electric 299-0311
— Gas 298-1400

isis Centre
Persons in Emotional Crisis: like ression, physical and mental se, marital and family upset and cide.

BURNABY
NORTH VANCOUVER
VANCOUVER
WEST VANCOUVER
733-4111

RICHMOND
DELTA
273-8701

COQUITLAM
MAPLE RIDGE
NEW WESTMINSTER
PITT MEADOWS
PORT COQUITLAM
PORT MOODY
525-3330

LANGLEY
530-5385
SURREY
WHITE ROCK
588-0188

TELECARE DISTRESS
437-3445

dial '0' for Operator

e the Operator the AREA NAME where help is needed. If you cannot sta/ he telephone tell the Operator the exact LOCATION of the emergency.

.....
(insert your address and your telephone number for emergency use)

EMERGENCY CALLS ON PARTY LINES
In the interest of the protection of life, health and property it is important that the user relinquish the telephone line when requested by the Operator or other person in emergencies such as fire, accident, sickness, commission of crime or similar emergency.

HOSPITALS
See YELLOW PAGES™ under "Hospitals".

EMERGENCY PROGRAMME
See White Pages under "E" "Emergency Programme".

The above list has been prepared from the best information obtainable, the Company, however, does not assume responsibility for omissions, nor for errors or subsequent changes in these numbers.

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APPENDIX E

COMPUTING CALL VOLUMES AND ANSWERING POSITIONS IN AN URBAN SETTING

Computing Call Volumes and Answering Positions In An Urban Setting

1. Expect 2 calls per 1000 population on an average day.

2. A busy day is about 40% busier than an average day.

3. There will be an overall increase of 10% in the number of calls that are received because of greater public use of 911.

4. Approximately 10% of the day's total call volume occurs in the busiest hour of the day.

Therefore, for every 1000 population there will be .31 calls in the busiest hour. (2 x 1.4 x 1.1 x .1 = .308)

From this it is calculated that by shift the busiest hour call volumes will be:

Afternoon shift - .31
Night shift - .18
Day shift - .25

Reporting an Emergency

The average time that a caller takes to report an emergency to a law enforcement agency is: 1-1/2 minutes.

The average time that a caller takes to report an emergency to a fire or medical agency is: 45 seconds.

An efficient PSAP can transfer a call on the average in 20 secs.

BUSY-HOUR REQUIREMENT FOR CALL ANSWERS
(90% of the Calls Answered within 10 seconds)

Call Answerers	20 s.	45 s.	90 s.
1	27	9	4
2	129	54	21
3	260	98	45
4	404	154	71
5	556	215	100

Calculating Calls for Service for GVRD

Population of 1,378,126 (1986 Stats)
Calls per day = 1378 x 2 = 2756
Calls per busiest hour:
    1378 x .31 = 427 Afternoon Shift
    1378 x .25 = 345 Day Shift
    1378 x .18 = 248 Night Shift

Call Answerers Required for Call Transfer Only

Staffing for the busiest hour for each shift you require (GVRD)
    4 Operators - Afternoon Shift
    3.5 Operators - Day Shift
    3 Operators - Night Shift
Total 10.5 x 1.6 (availability factor) = 17 Operators

Projection Year 2006

Population of GVRD 1,711,500
Calls per day - 1,711 x 2 = 3422
Calls per busiest hour:
    1711 x .31 = 530 Afternoon Shift
    1711 x .25 = 428 Day Shift
    1711 x .18 = 308 Night Shift

Call Answerers Required for Call Transfer Only/Year 2006 (GVRD)

    5 Operators - Afternoon Shift
    4 Operators - Day Shift
    3.5 Operators - Night Shift
Total 12.5 x 1.6 (availability factor) = 20 Operators

APPENDIX F

PUBLIC EDUCATION AND AWARENESS

911 Public Education

In order to have a successful 911 service, a vigorous and broad public education program must be undertaken*.

Plan the greatest coverage for the day the service begins, avoid early discussion in the news media that could cause the public to believe the service is available, when in fact it isn't.

Maintain an on-going program, particularly in the school system, that acts as a reminder that the service is available when it is required.

Include within the program a description of when and how the system should be used, i.e., what constitutes an emergency.

A summary of activities that should be considered is contained below under the headings of 'Short Term' and 'Long Term'.

* Aim for a 90% awareness

911 Public Education

Short Term - System Start-Up

1. Materials for school children - colouring books, posters, and telephone stickers (several languages).

2. Public service announcement for the user of radio and television (15 sec. or 30 sec.).

3. Place 911 posters in all public buildings.

4. The start-up should coincide with the distribution of the new telephone directory. The 911 number will appear on the back of the front cover for all participating emergency agencies.

5. Display 911 decals on all participating emergency vehicles.

6. Announcements at morning assembly for all grades in all schools in the GVRD on the start-up date.

7. Distribute brochures in the Saturday edition of the Vancouver Sun and the Sunday edition of the Province. (Hopefully at no cost)

Note: $21,000 has been budgeted by BC Tel for a 911 awareness program for the GVRD. Up to $12,000 of this amount can be used to pay production costs for advertising. The remainder can be used for the printing of pamphlets and brochures and for sending out bill inserts and 911 stickers.

8. Prepare material for the awareness of ethnic groups.

911 Public Education

Long Term

1. Material for school children - colouring books, posters, and telephone stickers (several languages).
2. Maintain 911 posters in all public buildings.
3. Display 911 decals on all participating emergency vehicles.
4. Encourage the school districts to include 911 in their health and safety instruction.
5. All police, fire and ambulance personnel who lecture school children on safety, should include a word on 911 in their talk.
6. Police, fire and ambulance displays or exhibits during safety week should include posters on 911.
7. Distribute 911 brochures and telephone stickers with the tax notice and/or telephone bill.
8. Maintain a large number of brochures on 911 for distribution through civic organizations, police, fire and ambulance personnel.
9. Encourage police, fire and ambulance personnel to include a word on 911 when speaking in public.
10. Supply brochures to hotels and tourist information offices.
11. Target and maintain an awareness program for ethnic groups.